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## RESUME

### James W. Litchfield

#### Education

1971 B.S. Civil Engineering - University of Washington  
1973 M.S. Management - Massachusetts Institute of Technology

#### Professional Experience

1/92 - President of Litchfield Consulting Group (LCG). LCG is focused on strategic power system planning, electric power restructuring, power marketing, electric power transmission, power contracting and regulatory needs of clients in the utility industry. LCG's clients include public and private utilities, industrial customers, regulatory agencies, state and regional planning commissions and independent power producers (see attached for a list of LCG's recent projects). Mr. Litchfield has twenty-three years of experience in the Pacific Northwest region in energy planning and decision analysis, environmental and power systems modeling and analysis, and strategic planning.

Mr. Litchfield was one of a team of seven scientists on the Snake River Salmon Recovery Team for the National Marine Fisheries Service (NMFS). NMFS formed the Snake River Salmon Recovery Team to develop a recovery plan for the endangered salmon stocks on the Snake River which is required under the Endangered Species Act. The Salmon Recovery Team was responsible for developing a recovery plan entitled, *Snake River Salmon Recovery Team: Final Recommendations to the National Marine Fisheries Service*, May, 1994. Mr. Litchfield provided technical knowledge and understanding of the hydropower system and how hydropower operations could be changed, within physical constraints, to improve the survival of salmon.

9/81 - 1/92 Director of Power Planning for the Northwest Power Planning Council, Mr. Litchfield led the development of the Northwest

Conservation and Electric Power Plans in 1983, 1986 and 1991. He was responsible for the management and direction of 12 professional staff with a budget of approximately two million dollars per year. Mr. Litchfield pioneered the design and implementation of integrated resource planning methodologies. The Council's plans are based on state of the art techniques for analyzing both demand side and supply side resources and incorporating uncertainty into integrated resource planning.

One of the basic assumptions of integrated resource planning is that conservation of electric power through efficiency improvements is treated as a resource on equal footing with conventional and emerging electricity producing technologies. Through the application of risk assessment and decision analysis methods, risk management strategies were designed and incorporated into integrated resource plans.

Mr. Litchfield was responsible for close coordination between the Council's plans and the regulatory policies of the four Northwest Public Utility Commissions in Idaho, Montana, Oregon and Washington. In this capacity, Mr. Litchfield chaired the State Agency Task force with representatives from the commission staffs in each state.

Mr. Litchfield has often testified before all of the Northwest's Public Utility Commissions and before regulatory and legislative hearings in England and Canada. Mr. Litchfield testified to the Ontario Canada Provincial Government Energy Committee on the first integrated resource plan by Ontario Hydro. He was one of two Americans on a five member strategic review team formed by the Ministry of Energy in Ontario to review Ontario Hydro's planning. Mr. Litchfield has also chaired two workshops organized by the Hawaii PUC on integrated resource planning and its application to the state's power system.

- 9/90 - 8/91 Member of the Academy of Science - National Research Council Committee to review the US Department of Energy's National Energy Modeling System. The Committee reviewed the models and analysis that DOE used for the National Energy Strategy. The Committee's recommendations called for the DOE to develop a national energy modeling system incorporating many of the concepts and methods developed and implemented by the Council.
- 7/86 - 11/91 Participant in scientific and technical exchanges between the United States and the Soviet Union. This exchange was initiated by the Academy of Science of both countries in the 1970s. Mr.

Litchfield has participated in technical conferences on planning techniques and efficient technologies for conservation, generation and transmission of electric power. Due to the rapid changes in what was the Soviet Union, there is tremendous need for improved technology for every aspect of electric power production, transmission and end use. Mr. Litchfield has helped to transfer planning and conservation experience in the Pacific Northwest to colleagues in Russia and other eastern european countries.

- 6/76 - 8/81    Manager of Energy Systems and Decision Analysis Section at Battelle Northwest. Responsible for the management of a contract research section with 15-20 research staff. Clients included the State of Alaska, the US Department of Energy, the Nuclear Regulatory Commission and the States of Washington and Oregon. The group conducted research into emerging energy technologies and developed multiattribute decision analysis techniques to set priorities for long range planning, research and development.
- 7/73 - 6/76    Research Engineer at Battelle Northwest responsible for the design and development of management information systems for the Nuclear Regulatory Commission and the development of decision analysis and risk assessment techniques.

## Litchfield Consulting Group (LCG),Inc. List of Clients and Brief Project Description

1. Duke Energy – Mr. Litchfield prepared an assessment of commercially available conservation and power supply alternatives in the Pacific Northwest. This analysis evaluated all potentially available electric power resources and determine the extent to which they were commercially available to meet regional power needs in the future.
2. The Idaho Office of the Northwest Power Planning Council – Mr. Litchfield is providing strategic advice on salmon recovery and Federal Implementation Planning for implementation of the Biological Opinion for the Federal Columbia River Power System.
3. Expert Testimony for Load Serving Utilities – Mr. Litchfield provided expert testimony in the FERC ordered process to investigate possible refunds for power sold into the California Power markets during the winter and spring of 2000-2001. His clients were Arizona Public Service Company / Pinnacle West Capital Corporation, Avista Corp., Puget Sound Energy, Public Service Company of New Mexico, Public Service Company of Colorado, Nevada

Power Company, Sierra Pacific Power Company, Portland General Electric Company and Tucson Electric Power Company.

4. Newport Northwest – Mr. Litchfield has been retained by Newport Northwest to provide expert testimony in the Energy Facility Site Evaluation Council review of the Wallula site in Washington State.
5. Utility and Industrial Customers – Mr. Litchfield was retained by a group of utility and industrial customer to work with Senator Derfler in Oregon on a study of restructuring the Bonneville Power Administration. The report evaluated a range of possible roles for BPA that included the current situation provided in the NW Power Act to full privatization of the agency.
6. City of Cove – Mr. Litchfield is providing the City with expert advice to help resolve a power contract dispute that the City is having with the sale of power from a City owned small hydropower plant.
7. Hafslund Power Marketing – Mr. Litchfield has provided advice concerning hydropower operations in the region based on the recommendations of salmon managers and his knowledge of the hydropower system in the region and the requirements for fish and wildlife protection under the Endangered Species Act and the NW Power Act.
8. Pacific Northwest Utilities Conference Committee (PNUCC) - Mr. Litchfield is working on a wide variety of issues associated with changes that are resulting from the NW Power Act and the Endangered Species Act (ESA). This effort is designed to insure that the region is clear about the goals for both ESA protected salmon and other fish and wildlife stocks and to encourage objective scientific analysis of alternative proposed actions.
9. The State of Montana - Mr. Litchfield has been retained to be the Montana State's representative on the Technical Management Team (TMT) and the Implementation Team (IT). The TMT and IT provide input to the Federal Agencies on operation of the federal hydropower system under the National Marine Fisheries Service (NMFS) biological opinions under the Endangered Species Act.
10. National Energy Systems Company - Mr. Litchfield is working with NESCO, a power plant developer, to assist with analysis of transmission and other siting and power plant development decisions in the Northwest. The focus of this work is to provide West Coast power market price forecasts and to evaluate the possible transmission pricing, access and availability issues associated with planned development of new power plants and existing plant expansions.
11. Portland General Electric – Mr. Litchfield was retained to facilitate a series of ratecase workshops. These workshops were conducted during the fall and winter of 1987 and were attended by a wide spectrum of PGE's customers and interest groups. The subject of the workshops was primarily the implications for PGE's rates of the "Customer Choice" proposals that would provide open access to competitive power markets for all consumers in PGE's service territory.

12. Washington Water Power Company – Mr. Litchfield has been retained by WWP to assist with regional energy issues that require a presence in Portland. The specific nature of the tasks that Mr. Litchfield will be asked to perform will be determined as issues of a policy nature important to WWP are identified and regional processes are established.
13. Puget Sound Energy (PSE) – Mr. Litchfield prepared and presented expert testimony in litigation between PSE and a cogeneration facility. The scope of Mr. Litchfield's testimony focused on the changes in national energy policy and specifically FERC regulation, that have introduced competition to the electric power industry at currently the wholesale level but ultimately the retail level. Mr. Litchfield also testified as to the regulatory requirements that face utilities with respect to management of their purchase power contracts.
14. LCG was retained by six Northwest Investor Owned Utilities and Sierra Pacific Resources which serves the Reno area to represent them in the Comprehensive Regional Review of the Northwest Power System initiated by the Governors of the four Northwest states. Mr. Litchfield participated in the Regional Review's processes to provide technical and policy on issues related to BPA's roles in power marketing and transmission.
15. Regional Review - LCG provided technical and policy advice to the Governor's public process to evaluate and recommend changes to the region's electric power industry and especially to recommend changes in BPA's role that are consistent with the requirements of a competitive electric power market. Mr. Litchfield delivered a kick-off speech at the request of the four governors of the states of Idaho, Montana, Oregon and Washington. Mr. Litchfield also evaluated alternative industrial structures and identified issues for the Regional Review to resolve as BPA's electric power system is restructured to meet the needs of a competitive electric power marketplace.
16. BPA - LCG provided technical assistance to BPA's outside counsel in the development of litigation strategy with respect to a contract dispute between BPA and a resource developer. Mr. Litchfield researched changes in the National Energy Policy Act, 92 and reviewed FERC's regulatory changes in the proposed Mega-NOPR and its orders 888 and 889. Mr. Litchfield identified how changes in policy and regulation have reshaped the competitive bulk power marketplace and impacted on BPA's statutory mission.
17. BPA-Puget Power – Mr. Litchfield was retained as a facilitator to resolve a transmission dispute between BPA, Puget Power and Tanner Electric. The dispute resolution was undertaken under the guidelines of the NW Regional Transmission Agreement. Mr. Litchfield assisted the parties in understanding their respective positions and help them to identify alternative solutions that met all interests. The dispute was successfully resolved.
18. The Oregon Business Council (OBC) - LCG was retained by the OBC to evaluate the State of Oregon's current salmon policies. The state and the region are spending large amounts of resources in an effort to recover

threatened and endangered wild salmon stocks. LCG worked with the OBC staff and the Natural Resources Committee to develop management guidance and direction that will help the State improve the effectiveness of salmon recovery efforts.

19. Pacific Northwest Utility Conference Committee (PNUCC) - LCG worked with representatives of public and private utilities, the Direct Service Industries and the Bonneville Power Administration to evaluate alternative industrial structures to address the formation of a competitive marketplace in bulk power. The goal of this project was to design alternative transmission system operations models that could better implement the Federal open access transmission policies that are currently required by FERC. Mr. Litchfield facilitated the work of several technical, legal and policy committees of PNUCC.
20. PacifiCorp - LCG is working with another consultant to facilitate a group discussion of the policy alternatives for treating conservation efforts as the electric power industry becomes more competitive. The traditional approach to acquiring conservation as a resource through utility integrated resource plans will not be effective in the face of increasing competition in the energy marketplace. This project involves representatives of the relevant interest groups and is designed to identify changes in public policy that will ensure that the appropriate levels of efficiency are achieved.
21. Portland General Electric - LCG was retained as a technical expert in a power sales contract dispute. The long-term power contract is being disputed before FERC and Mr. Litchfield was retained as a technical expert to evaluate the terms and conditions of the contract and provide expert testimony.
22. Direct Service Industries, Inc. - LCG provides technical and policy advice on salmon recovery measures and scientific analysis of the impacts on salmon of alternative hydropower operations. The issues vary depending on the regional salmon debate and policies that are currently under discussion.
23. Oregon Business Council - LCG provided the OBC Board a presentation on the endangered salmon issue and its impact on Oregon and the economy. This presentation highlighted the management complexity surrounding salmon recovery and the need for a better management approach to recovery efforts.
24. Industrial Customer of a Northwest Utility - LCG conducted confidential power market research to determine alternative power supplies to meet the client's electricity needs. A Request for Power Supply was prepared and power supply proposals were evaluated against the terms, conditions and prices of the client's current supplier.
25. Modifications to Oregon's Siting Statutes - LCG worked for both Portland General Electric and PacifiCorp in the development and negotiation of changes to the Oregon Energy Facility Siting laws. Mr. Litchfield testified

before the Energy Siting Council and the Senate Energy Committee on the changes occurring in the electric power industry.

26. Puget Sound Power and Light - LCG worked with Puget in evaluation of West Coast power markets to aid in the development of a strategic plan.
27. Northwest Power Planning Council - LCG worked with Merrill Schultz and Associates to evaluate regional utility needs for Integrated Resource Planning and to advise the Council's staff on the development of improved planning data, analysis and models.
28. Public Power Council, Pacific Northwest Generating Company and the Direct Service Industries, Inc. - LCG has been retained to participate in settlement negotiations on the development of a new Biological Opinion on hydropower operations.
29. Sierra Pacific Resources - LCG is reviewing the utility's integrated resource planning and the decision criteria used to select new resources. The purpose of the review is to provide an objective expert review of the planning and decision making process and to suggest any improvements that may be appropriate.
30. Direct Service Industries, Inc. - LCG reviewed the System Operations Review (SOR) Environmental Impact Statement under development by the US Army Corps of Engineers, the Bonneville Power Administration and the Bureau of Reclamation. The SOR is a review of the federal hydropower system in the Northwest and the many constraints on, and competing uses of, water. The resulting EIS provided operational criteria and constraints that seek to balance the physical system's constraints and the amount and quality of power that can be produced with the environmental impacts of alternative operational regimes. LCG participated on behalf of the DSIs to provide technical review and input on the costs and benefits of alternatives analyzed in the EIS.
31. Davis Polk & Wardwell - LCG developed an appraisal of the value of the WNP 3 Power Exchange Agreement between BPA and Portland General Electric (PGE.) This power exchange agreement involves the transfer of energy and capacity between the utilities for a 32 year period beginning in 1987. The Exchange was a result of litigation following the termination of construction at the Washington Public Power Supply (WPPSS) nuclear plant 3. The value of the Exchange contract was needed for determination of the appropriate tax treatment for PGE's investment in the nuclear plant.
32. Puget Power - LCG developed expert testimony in a Washington Utilities and Transportation (WUTC) case involving the utility's planning and decision making process that led to the acquisition of several independent power projects. LCG testimony centers on the planning process used by Puget in the 1980s and the congruence between Puget's methods and those developed by the Northwest Power Planning Council.

33. Pacific Gas and Electric - LCG was an expert witness on the availability of non-firm power and intertie transmission between the Northwest and California during the 1980s and 1990s. The expert testimony was needed in a contract dispute that was, in part, caused by the availability of low cost non-firm power from the Northwest.
34. Great Whale Public Review Support Office - LCG provided expert assistance on the review of the Great Whale Project EIS. This project resulted in a publication entitled, Integrated Resource Planning and the Great Whale Public Review, Litchfield, J., Hemmingway, L., and Raphals, P.
35. Mouvement Au Courant - LCG developed a paper describing the interactions between regulatory and IRP processes in the United States. This paper also provided background on current planning and hydro licensing processes used in the U.S. The analysis of current regulatory and planning processes was presented in hearings on Hydro-Quebec's proposed St. Marguarite 3 hydroelectric project.
36. Pacific Power - LCG conducted an analysis of the financial and rate impacts of aggressive conservation program implementation. The introduction of high capital cost conservation increases the early costs and reduces sales. This led to higher rates in the short-run followed by lower rates in the long-run. LCG analyzed current rate making methods used to allocate costs and benefits and identified equity concerns that are presented by conservation resources.
37. Great Whale Public Review Support Office (Quebec) - LCG developed a paper describing integrated resource planning criteria and their relationship to the Guidelines developed for the review of the Great Whale Project.
38. British Columbia Utilities Commission - LCG acted as a technical facilitator for a workshop on Integrated Resource Planning / Least Cost Planning in Vancouver, BC. The workshop was sponsored by the BCUC and was designed as a preview of IRP methodologies and requirements. The BCUC was considering IRP as a new planning requirement for Electric and Gas utilities.
39. MicroGrid - LCG provided assistance with the development of a Demand Side Management resource proposal to secure conservation from the commercial buildings sector. This proposal was submitted to two public utilities and BPA.
40. Intercompany Pool (ICP) - LCG was retained by the ICP to assist with the renegotiation of the power sales contracts between BPA, the region's utilities and Direct Service Industries (DSIs.) The current power contracts expire in 2001, however, the importance of these contracts to all of BPA's customers makes it necessary to renegotiate the contracts before the end of the contract term. This process is also involved efforts to restructure BPA by development of a marketing plan, tiered rates and redesign of transmission access, terms, conditions and pricing.



41. Montana Power Company - LCG provided an independent audit and evaluation of MPC's first resource bid evaluation process. The company asked LCG, as outside experts, to evaluate the methods and approaches used by the MPC staff in evaluating the new resources bids they received from independent developers. Alternative evaluation methods were applied to independently rank the projects developed by the MPC staff. The results were similar to those reached by the MPC staff.
42. Calpine Corporation - LCG provided assistance with the development of a marketing strategy for cogeneration development and assisted Calpine in marketing of their project to northwest utilities. This resulted in a successful letter of intent between Calpine and Pacific Power and Light.
43. Northwest Wind Advisory Council and the Electric Power Research Institute - LCG worked with Decision Focus, Inc. to provide an assessment of the utility industry's decision making needs with respect to wind resources. This resulted in the development of a *Wind Resource Primer* to assist utility planning and decision making for the acquisition of new Wind resources.
44. Bonneville Power Administration - LCG conducted a review of BPA's energy system planning models and developed a strategic plan for future model development, analysis and maintenance. This work involved interviews with analysts, management and policy makers to determine their perspectives on the adequacy of current quantitative analysis and any additional information needs. LCG recommended the formation of a new internal group called the Analytical Review Team (ART) to provide analytical quality assurance and strategic direction for additional model development.
45. The Northwest Power Planning Council - LCG assisted the Council in the development of a strategic plan for achieving the conservation targets in the plan. Recognizing the rapidly changing utility industry and the increase in competition from non-utility sources, the traditional centralized methods of conservation delivery mechanism need to be rethought and redesigned.
46. Pacific Power & Light - LCG developed a paper describing a economic methodology for incorporating environmental externalities into IRP. Based on economic and decision theory, this methodology recommends the use of multi-attribute decision analysis methods to incorporate the many non-price factors into the resource selection process used in utility's IRP. This work was presented in testimony before the PUC and discussed and evaluated by the PUC staff and interest groups in PUC working sessions.
47. Makowski & Assoc. - LCG provided assistance with gas-fired resource marketing to BPA and other utilities in the Northwest. Specific consultations included participation in a regional advisory committee to Makowski and assistance with marketing and communication to BPA in the bid evaluation process.
48. Tacoma City Light - LCG provided assistance in the development of the Integrated Resource Plan (IRP.) This assistance included conducting

analysis of the costs, benefits and uncertainties associated with gas-fired resources. LCG also provided assistance with the incorporation of environmental externalities into the planning and resource selection process.

49. Portland General Electric Co. - Assistance with analysis of alternatives to the Trojan nuclear power plant for the Least Cost Plan published in 1992. LCG provided expertise in Regional power systems analysis and modeling of uncertainties. The Northwest Power Planning Council's power systems model (ISAAC) was used to test alternative courses of action for PGE and a new model was built to analyze the uncertainties associated with the Trojan decision.
50. National Marine Fisheries Service - Snake River Salmon Recovery Team - LCG is one of a seven member scientific team responsible for drafting a Recovery Plan for the endangered salmon stocks on the Snake River.